Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-36 (canceled).

Claim 37 (currently amended): A method for measuring thickness of a thin film comprising:

irradiating light onto a sample on which a pattern is formed and which is covered with an optically transparent thin film;

using an optical system, detecting light reflected from the sample in response to irradiating the sample; and

calculating the thickness of the optically transparent film using spectral waveform information from the detected reflected light;

wherein in the step of calculating, data regarding surface area ratio of the pattern occupying a measurement field of view and surface area reflectivity of the pattern are both used.

Claim 38 (previously presented): The method for measuring according to claim 37, wherein the width of the pattern formed on the surface of the sample is no greater than 1μm.

Claim 39 (canceled):

Claim 40 (currently amended): ~~The method according to claim 39~~ A method for measuring thickness of a thin film comprising:

irradiating light onto a sample on which a plurality of layers of films are formed and having a surface overlaid by an optically transparent thin film;

detecting light reflected from the sample in response to irradiation of the sample; and

determining the thickness of the optically transparent thin film using spectral waveform data from the detected reflected light and wherein the thickness of the optically

transparent thin film is determined using waveform information calculated by using models having a plurality of layer structures

wherein the models include ~~regional models~~ a boundary structure model in which the light reflected from ~~the~~ a pattern is mixed with the light reflected from a layer below the pattern.

Claim 41 (currently amended): The method according to claim ~~39~~ 40 the models include at least models of a first type layer structure; a second type layer structure; and a combination of a first type layer structure and a second type layer structure.

Claim 42 (currently amended): A method for measuring thickness of a thin film comprising:

irradiating light onto a sample on which a pattern is formed and covered by an optically transparent thin film;

detecting light reflected from the sample in response to irradiation of the sample and determining its spectral waveform; and

calculating the thickness of the optically transparent thin film using spectral waveform information of the reflected light;

wherein in the step of calculating the thickness of the optically transparent film, a ~~regional model~~ boundary structural model is generated which takes into account a region where the reflected light from the pattern and the reflected light from the layer beneath the pattern are mixed, a waveform of light reflected from the ~~regional model~~ boundary structural model thus generated is calculated, and the thickness of the optically transparent film covering the pattern is determined using data regarding the spectral waveform of the detected light reflected.

Claim 43 (previously presented): The method according to claim 42 wherein a width of the pattern on the sample is no greater than 1μm.

Claim 44 (currently amended): A method for measuring thickness of a thin film comprising:

irradiating light onto a wafer surface, the wafer having a pattern on an underlying layer covered by an optically transparent thin film;

detecting light reflected from the wafer surface; and

measuring the thickness based upon the detected reflected light by determining measurement points at which ~~an interference component~~ light reflected from the pattern is dominant compared to light reflected from the underlying layer.

Claim 45 (previously presented): The method according to claim 44 wherein the measurement points are determined using at least one of maximum and minimum values of the spectral data.

Claim 46 (previously presented): The method according to claim 44 wherein the measurement points are determined using a frequency analysis of the spectral data of the reflected light.

Claim 47 (currently amended): The method according to claim 44 wherein within a measurement field of view, a surface area ratio of the structure to be measured occupying a measurement field of view is determined from the spectral data of the reflected light, and the measurement points are determined using data from the surface area ratio.

Claim 48 (previously presented): Apparatus for measuring the thickness of a thin film comprising:

an irradiating device to provide light to a sample on which a pattern is formed and which has an overlying optically transparent thin film;

a detector to detect light reflected from the sample within a detection area; and

a calculator which receives information from the detector and in response calculates the film thickness of the optically transparent thin film, wherein the calculator using surface area ratio data of the pattern within the detection area.

Claim 49 (previously presented): Apparatus as in claim 48 wherein the detector detects light in a wavelength band of 400 - 800 nm.

Claim 50 (previously presented): Apparatus as in claim 48 further comprising a measurement point identifier which, using spectral data of the reflected light determines positions of measurement points.

Claim 51 (previously presented): Apparatus as in claim 50 wherein the measurement point identifier determines measurement points using information relating to position, and at least one of information related to maximum value and information related to minimum value of the spectral data of the reflected light.

Claim 52 (previously presented): Apparatus according to claim 50 wherein the measurement point identifier performs frequency analysis of the spectral waveform data of the reflected light and determines measurement points having desired conditions on that basis.

Claim 53 (previously presented): Apparatus as in claim 50 wherein the measurement point identifier determines the locations of the measurement points based on the surface area ratio in the detection area using the spectral data of the reflected light.

Claim 54 (currently amended): An apparatus for measuring the thickness of an optically transparent thin film comprising:

irradiating means for irradiating light onto a sample having the optically transparent thin film formed over a pattern thereon;

detecting means for detecting the reflected light generated by the sample due to the irradiation of the light by the irradiating means, by means of an optical system; and

film thickness calculating means for calculating the film thickness from the data detected by the detecting means;

wherein the film thickness calculating means establishes a ~~regional model~~ boundary structural model in which the light reflected from the pattern is mixed with the light reflected from a layer below the pattern, comprising a plurality of layer structures calculates the waveform of the reflected light from the ~~regional model~~ boundary structural model, and determines the thickness of the optically transparent film by fitting, using the waveform information thus calculated and the spectral waveform information of the detected reflected light.

Claim 55 (previously presented): Apparatus as in claim 54 wherein the detecting means detects light of wavelengths between about 400 and 800 nm.

Claim 56 (previously presented): Apparatus as in claim 54 further comprising measurement point determining means for determining measurement points using spectral data of the reflected light detected by the detecting means.

Claim 57 (previously presented): Apparatus as in claim 56 wherein the measurement point determining means determines measurement points using information relating to the position and at least one of a maximum and a minimum value of the spectral data of the reflected light.

Claim 58 (previously presented): Apparatus as in claim 56 wherein the measurement point determining means performs frequency analysis of the spectral waveform data of the reflected light and determines measurement points having desired conditions on the basis of the frequency analysis.

Claim 59 (previously presented): Apparatus as in claim 56 wherein the measurement point determining means determines a surface area ratio in a field of view from the spectral data, then determines measurement points on that basis.

Claim 60 (currently amended): A method for measuring film thickness comprising:

irradiating light onto a pattern ~~on an integrated circuit~~ formed on a wafer having an n optically transparent thin film;

detecting light reflected ~~by the pattern~~ from said wafer;

using spectral waveform data of the detected reflected light, determining plural measurement points on said wafer by frequency analysis or fitting for measuring the film thickness; and

measuring the film thickness at the measurement points, by successively irradiating light onto the measurement points.

Claim 61 (previously presented): The method of claim 60 wherein in the step of determining plural measurement points, the measurement points are determined by using information obtained by frequency analysis of the spectral waveform data of the reflected light.

Claim 62 (previously presented): The method of claim 61 wherein the measurement points are determined by using information for a high-frequency component intensity and a low-frequency component intensity, each obtained by frequency analysis of the spectral waveform data of the reflected light.

Claim 63 (previously presented): The method of claim 61 wherein, in the step of determining plural measurement points, the measurement points are determined by using information for waveform periodicity of the spectral waveform data.

Claim 64 (currently amended): The method according to claim 60 wherein the plural measurement points are determined by using information obtained by comparing the spectral waveform data with ~~logical~~ theoretical waveform data.